An Educational Intervention for Improving Knowledge of Syrian School children About Avulsion

nancy Al zaher (nancyzhr3@gmail.com)
Damascus University https://orcid.org/0000-0002-2513-4625
Mayssoon Dashash
Damascus University

Research article

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Abstract

Objective: The prognosis of replantation of an avulsed tooth is affected by the first aid management in the first 15 minutes after traumatic incident. Knowledge of the optimal management is crucial to successful replantation. The aim of this study was to investigate the effectiveness of educational intervention using the Arabic poster prize in improving the knowledge of primary schoolchildren about firstaid management of avulsion.

Methods: An interventional educational study was undertaken. A total of 550 schoolchildren aged 9-12 years participated in this study. Thirteen public primary schools in Damascus city were chosen. A questionnaire was developed to measure the knowledge of schoolchildren about avulsion management. The translated IADT education poster about avulsion management was adopted .The content of this poster was explained to the children. Two months later, the subjects were re-evaluated using the same questionnaire. Paired sample *t*-test was used to compare the improvement of knowledge before and after.

Result:A total of 537 schoolchildren completed the questionnaires in which (N=305(57% were females and (N=232) 43% were males. The findings demonstrated significant improvement in the participants' responses after 8 weeks($P<0.05$). The mean score of knowledge increased significantly from 3.71 in baseline to 4.03 after 8 weeks($P<0.003$).

Conclusion: The educational intervention showed significant improvement intheirknowledge of children about avulsion after education.This interventional method can be suggested as a practical valuable tool that can be generalized to cover all children in Syrian society in the hope to prevent negative consequences of avulsion.

Introduction

Traumatic dental injuries (TDI), within and around the mouth and oral cavity, has a multitude of consequences that can have a negative impact on traumatized individual, family members, and society. These injuries cause psychological, esthetic, social, and curative problems[1].

One particular type of dental injury is tooth avulsion, which is a complex traumatic injury to periodontal and pulpal tissue[2]. Tooth avulsion is the complete displacement of a tooth from its socket in alveolar bone, commonly due to various traumatic etiologies[3, 4].

The prognosis of avulsed tooth depends on appropriate management at the place of accident and the extra-alveolar time after the avulsion [5, 6].

For tooth avulsion, it is of critical value to educate children, parents, teachers and school nurses about avulsion rather than health professionals. Ideally, they all should know what to do with an avulsed tooth at the scene of accident. Previous studies have reported a low level of knowledge about first aid management of dental trauma including avulsion [7-9].

Previous studies have indicated lack of knowledge among teenagers' about TDI[10-14] and suggested improving knowledge about TDI management including avulsion [15].They have undertaken studies aiming at improving knowledge about dental trauma among societies through implementing public awareness campaigns, distributing leaflets, posters, and organizing educational presentations. This has been shown to be very effective in preventing dental trauma and providing first aid management of avulsion [16-20].

Clinically, the number of patients attending clinics with traumatic dental injuries (TDI) has increased during Syrian crisis with no data shown the exact prevalence[21].

In this regard, there is a lack of knowledge and awareness towards the management of dental injuries including avulsion in Syria. Therefore, this study was undertaken to investigate whether the use of Arabic version of IADT poster, which discuss the firstaid management of avulsion, could improve the knowledge and awareness of Syrian schoolchildren in Damascus.

Materials And Methods

Study design

An interventional educational study was undertaken in thirteen public schools in Damascus, Syria. Schools were randomly selected by simple random sampling method. Sample collection was carried out between September2018 and November 2018.A total of 550 children aged 9-12 years oldparticipatedin this study.

Ethical Approval:

Ethical Approval was obtained from the Research and Ethical Committee of the Faculty of Dentistry in Damascus University, Syria(No. 543/4408) dated 12-9-2018. In addition, a formal permission was obtained from the Ministry of Education in order to get access to schools and perform the required examinations on children.

Study Setting:

The city of Damascus was divided into 2 areas; The first area represents people with high educational and social status and area 2 related to low status.

The study sample was recruited from primary schools in each areas. Schools were randomly selected using a list of the primary schools in the city of Damascus.

Educational tools

Poster and questionnairedesign

The Arabic version of the poster “Save your tooth” which was designed by the International Association of Dental Traumatology (IADT)was used[22].

Besides the poster, the assessment was performed using a dual-part questionnaire: The first part contained the participants’ demographic information (age, gender, name of school) and the second part was related to the awareness, knowledge, and attitude towards dental trauma emergency protocol for tooth avulsion(Additional file 1).

Educational Intervention

The study application was divided in three phases: pretest (baseline), intervention, and posttest.

The evaluation of knowledge before and after the educational intervention was assessed using identical questionnaire to measure the differences existed. The evaluation was undertaken immediately before, and after 8 weeks of the educational intervention.

The educational intervention included explaining the content of the Arabic version of the IADT “Save your Tooth” poster to children by the principal investigator(NAZ)as a short story explaining the first aid management of avulsion, so the children could understand it.

The presentation was finished with a question-and-answer discussion to make sure that children understand the poster and its contents

Statistical analysis

Data from the questionnaires were analyzed using SPSS version 25. Descriptive statistical analysis was carried out. Moreover, Paired sample *t* -test was used to compare the pretest score with posttest score.The Chi square test was used for evaluating the changes of the percentage of correct answers after the intervention. Level of significance and confidence interval were set at 5 and 95%, respectively. *P* value less than 0.05 was considered statistically significant.

Results

A total of 537out of 550 schoolchildren completed the questionnaire. The response rate was 97%. About 305(57%) were females and 232 (43%) were males. The mean age of females was 10, 57±0.978 and the mean age of males was 10, 56±0.970. The schools were grouped into two areas with 244 (45%) living in high educational social areas and 293(55%) living in low social educational areas. Table 1 presents the demographic characteristics of study population.

Table 1

Characteristics of study population

Gender		Age	Area (%)		
N (%)		Mean±sd	1(high status)	2(lowstatus)	total
Male	232(43)	10.56±0.970	107 (44)	125(43)	232(43)
Female	305(57)	10.57±0.978	137(56)	168(57)	305(57)
Total	537(100)	10.56±0.974	244(45)	293 (55)	537(100)

SD = standard deviation

The frequencies and percentages of answers provided by subjects are presented in Table 2. The findings show that the participants' responses improved significantly ($P<0.05$) after learning through the poster. Before the educational session, only (N=209) 38.9% reported that they look for the tooth directly when avulsion tooth occurs, and the percentage of children has significantly increased to (N=475) 88.5% after 8 weeks. In addition, the percentage ofchildren indicated that they hold the tooth by the crown has also increased significantly ($P=0.000$) from (N=448) 83.4% before poster education to (N=485) 90.3% after 8 weeks. Moreover, the knowledge about storage media has significantly improved from (N=89)16.6% before the education session to (N=401) 74.7% after 8 weeks (P=0.000).

The knowledge about seeking professional help for an avulsed tooth, between the two visits, was also improved from (N=393) 74.3% to (N=508) 94.6% (P=0.000).

Table 2.

The frequencies and percentages of answers the participants pre and post poster presentation

Questions	Pre		Post		P value*
	Correct answer n (%)	Incorrect answer n(%)	Correct answer n(%)	Incorrect answer n(%)	
Q:what is the first thing would you do when avulsion tooth occurs? **Answer: looking for the tooth**	209(38.9)	328(61.1)	475(88.5)	62(11.5)	0.000
Q: where would you hold the tooth? **Answer: from the crown**	448(83.4)	)8916.6(	485(90.3)	52(9.7)	0.000
Q: would you clean the tooth? **Answer: yes**	465(86.6)	72(13.4)	491(91.4)	46(8.6)	0.001
Q: If you would clean the tooth, how would you do that? **Answer: rinse in cold tub water**	305(56.8)	232(43.2)	331(61.6)	206(38.4)	0.02
Q: how would you store the tooth until you visit a dentist? **Answer: milk**	89(16.6)	448(83.4)	401(74.7)	136(25.3)	0.000
Q: if you don't find a storage media to store the tooth, where would you put the tooth? **Answer: in the mouth between cheeks and gums**	78(14.5)	459(85.5)	449(83.6)	88(16.4)	0.000
Q: when should you go to a dentist? **Answer: Immediately ,within the first 30 minutes from the injury**	393(74.3)	138(25.7)	508(94.6)	29(5.4)	0.000

(n, %) number and percent of correct and incorrect answer

P values derived from Chi square test.

In the present study, the mean score of knowledge for each participant were collected in the two study times. The improvement in the mean score was assessed. The mean score of knowledge increased significantly from 3.71 in baseline to 4.03 after 8 weeks. Table 3 demonstrates the paired sample *t*-test results for all questions.

Table 3
comparison the mean differences of knowledge score

	knowledge score mean ± sd		
	baseline	post 8 weeks	P value
schoolchildren's knowledge score	3.71± 1.264.03± 2.19	t= 2.935	P<0.003

*paired sample t-test was applied to compare mean differences of knowledge score pre and post 8 weeks.

Discussion

To our knowledge, this study is the first that investigate the effectiveness of educational intervention in improving the knowledge of Syrian schoolchildren about avulsion. For this purpose, the Arabic version of IADT " Save the tooth" poster which was translated and validated by one of the authors of this study (MD) was utilized[22].The IADT poster "save your tooth"is easily accessible and is available for free to public. Therefore, it was translated into more than 40 languages) https://www.iadt-dentaltrauma.org/for-patients.html(.

Several studies have employed various versions from IADT poster to improve the knowledge of teachers, nurses and parents[16, 23, 24].

The current study utilized the Arabic IADT poster " Save the tooth" as an educational tool, since it contains information about first aid management of avulsion tooth according to IADT guideline[5]. Previous researchers have found this poster to be an effective educational tool, inexpensive, easy to understand and to implement[25].

Syrian School children between 9-12 years were selected since they would be more cooperative, have more logical thinking, and can realize cause-result interactions when compared to younger children[26].

The questionnaire administered to the children in this study was carefully planned to enable and facilitate the evaluation of knowledge gained through education.

The findings of the present study showed that the level of knowledge of Syrian primary schoolchildren regarding first-aid management of avulsion was limited and this was similar to other previous studies[10, 11]. The lack of knowledge could possibly mean that the avulsed tooth might not be replanted at all, or not received the optimal urgent management in which poor prognosis might occur. This is regrettable because with simple measures, the outcome can be very different.

The results of follow-up showed that intervention was effective in improving the knowledge of schoolchildren. There was a positive and statistically significant change in awareness from baseline to 8 weeks in all items of knowledge. For example, before distribution of the educational poster, 16.6% of participating preferred milk as storage media for transferring an avulsed tooth. However, after the intervention 74.7% of children selected milk as suitable storage media,which is similar to the findings reported by a study undertakenbyBistrickienė(2019)[27],who reported improvement in the knowledge regarding this issue after educational intervention.

The IADT guidelines [5] recommended rinsing the avulsed tooth for about 10 seconds under running water for a dirty avulsed tooth. A noteworthy improvement in the knowledge of our study participants regarding this issue was observed after intervention(P=0.02).

AL Sariand co-workers (2019) reported improvement in the knowledge regardinghow to clean avulsed tooth [16].

Additionally, in the present study, concerning the issue of seeking help within 30 min of an avulsed permanent tooth. The improvement of knowledge in this aspect was demonstrated after intervention (P=0.000).Similar improvement was observed in the study byBistrickienė(2019)[27].

This improvement can be attributed to the health messages delivered interactively to children as a short story, in simple language, with colorful images, so the children could get useful information in an easy and entertaining way.

That poster significantly improved knowledge on the emergency management of (TDI) among primary schoolchildren. This represents an important educational outcome implying that an educational poster including information and pictures of the subject may be an effective material in improving knowledge for a topic such as first aid injury management.

Castilho et al (2009) [13] confirmed in their studies that the educational campaigns for prevention of accidents involving the dental tissues and for improvement of the prognosis of avulsed teeth are noteworthy as an urgent necessity.

This study provides valuable insight regarding the effectiveness of dental health education among Damascus City’s school-aged children.

Conclusions

The findings of this study have addressed the importance of educational intervention in improving the learning about management of avulsion. The Arabic IADT poster distributed to the participants of the study should be distributed to all Syrian schools. Further studies should be undertaken to investigate all factors that can improve knowledge about traumatic injuries and increase its retention.

Abbreviations

TDI: Traumatic Dental Injury. IADT:International Association of Dental Traumatology. MD: Mayssoon Dashash. NAZ: Nancy Al Zaher. SD: standard deviation

Declarations

Ethics approval and consent to participate

Ethical Approval was obtained from the ethics committee of the Faculty of Dentistry in Damascus University, Syria. In addition, a formal permission was obtained from the Ministry of Education in order to get access to schools and perform the required examinations on children. A written informed consent was obtained from all parents of the study participants.

Consent for publication: Not applicable.

Availability of data and materials:

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

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Authors' contributions

NAZ collected the data and did the field work. Both NAZ and MD participated in designing the study, data analysis and interpretation, and writing the manuscript and revising it before submission. All authors read and approved the final manuscript.

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Author information:

1Paediatric Dentistry Department, Faculty of Dentistry, Damascus University, Damascus, Syria.

2Paediatric Dentistry Department, Faculty of Dentistry, Damascus University, Damascus, Syria.

3Centre for Measurement & Evaluation in Higher Education, Ministry of Higher Education, Damascus, Syria.

Corresponding author

Correspondence to Nancy Al Zaher

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